

## **ABSTRACT**

The disclosure relates to a process for preparing butadiene. The process involves nonoxidatively catalytically dehydrogenating butane to obtain a product gas stream containing butane, 1-butene, 2-butene, butadiene, hydrogen and secondary constituents. The 1-butene and 2-butene of the product gas stream is then oxidatively dehydrogenated to give a second gas stream containing butane, 2-butene, butadiene, hydrogen, steam and secondary constituents. Next, the butane, 2-butene and butadiene are separated from the second gas stream and the butane and 2-butene are then separated from the butadiene product. The butane and 2-butene are then recycled into the nonoxidative catalytic dehydrogenating zone.